

***American Biotech Labs***<sup>®</sup>  
**Silver Solution**  
**Test and Information Summary**

***Proprietary Information/Not For Public Dissemination***

**\*This is a partial list only\***

**Last Entry Date 04/04/08**

\* Patented, With Numerous Patents Pending

American Biotech Labs' (ABL) silver product is the only patented engineered nano silver particle product in the world. Three patents have been issued to us. The patents include construction, product, and also use patents. There are numerous patents currently pending. New work, under the direction of Dr. Rustum Roy, at Penn State, University of Arizona, and Arizona State, is leading to a new group of patents. The new pending patents are establishing ABL's silver technology as a very unique and highly advanced technology.

1) Product and Use Patent # 7,135,195. Nano size particle and unique form patent, use against bacteria, virus and disease. (A- 1- 5)

\* Government Approvals

American Biotech Labs' (ABL) silver product is the only silver product of this type to be proven so effective at killing bacteria that it has been granted two **U.S. EPA** approvals as surface disinfectants. The approvals allow the products to be used for industrial, commercial, or residential disinfection. On October 1<sup>st</sup>, 2004 the ABL was granted a **V.A. Hospital** contract, the only supplement of this type to be awarded a contract by the Veterans Administration (granted for both 10 and 32ppm products). A new gel form of the product, designed for burn and wound care, has been filed for **FDA** approval for both prescription and over-the-counter usage. The FDA approvals are expected by the end of the last quarter of 2008.

\* Human Studies From Four Different Hospitals

124 human studies in four different hospitals have been completed to date. The studies were designed to test the oral use of the product (at 10 ppm) to treat 18 different human ailments and diseases. In these studies there were no failures, and almost all patients were deemed as fully recovered in less than one week. The studies included ailments such as: upper respiratory tract infections, eye infections, ear infections, urinary tract infections, sore throats, abdominal pain and diarrhea, bronchitis, vaginal yeast infections, external cuts, gonorrhea, pelvic inflammatory disease, various mouth problems, retro viral infections, malaria, etc. The test work outlined what the problem was, how much of the ABL 10 ppm product was used and how often, when they saw

signs of recovery, and when the patients were deemed as fully recovered by the doctors. The doctor's notes are also included. The product was found to be so effective that the country of Ghana approved the product as an antibiotic-alternative drug. (A-10-1 section 8)

\* Malaria

1) The first two human studies looked at Malaria in general with 17 other ailments. The second two studies were focused on just the treatment of Malaria under a standard protocol. To date 54 Malaria patients have been treated with the ABL 10 ppm product. The ages of the patients involved in the studies have ranged from just 1 year to 90 years old. Both male and female patients were treated. On average, just an ounce of the product was used (in some cases as little as ½ an ounce was used) daily. On average, full recovery was obtained in 5 days. The shortest recovery times were about 2 days and the longest reported recovery time was about 10 days. A number of the cases were complicated in the fact that the patient was also suffering from other ailments including things like urinary tract infections, measles and fungal infections. We believe this may have been the reason for some increased treatment times. There were no failures in the testing, and all patients achieved full recovery in an average of five days. ( Studies 1&2, Dr. Kwabiah, Dr. Sackey, Dr. Abraham, Months 2-8/ 2003) (A-1-1 Section 8)

2) Malaria test data summary- summary of four different African human studies (54 human cases total). (A-7-2)

3) US Congressional Testimony- William D. Moeller- April 26<sup>th</sup>, 2005 (A-8-2)

4) Protocol (Long Version) for the treatment of Malaria using the ASAP 10 PPM product. (A-8-1)

\*Human Burn Studies

1) Human Radiation Burn Study - Summit Cancer Clinic- Report on a two year, 1000 bottle study of ASAP 10 used to treat radiation and other burns received in cancer treatment- December 4<sup>th</sup> 2003 by Dr. John Salzman- found that the product alleviated symptoms and promoted faster than expected healing of both heat and radiation burns. (A- 10 - 1 Section 8)

2) Human Radiation Burn Study - Alta Bates Summit Medical Center- Report on six years of using both ASAP 10 liquid and also ASAP Ultimate Skin And Body Care Gel for treating radiation and other burns received in cancer treatment- December 15<sup>th</sup> 2007 by Dr. John Salzman MD- This is an update of the original report from 2003. The author found that the product was highly effective in alleviating symptoms and promoting the faster healing of burns, emphasizing that the gel was more effective than the liquid.(B- 5-1)

3) Advanced Healing Systems (AHS) Burn Study- 7/25/07 - One person study- 88 year old female - extensive third degree burns on thigh- recovery in 64 days. One of numerous

wound care study cases completed (A-10- 4).

4) East Valley Regional Cancer Center - Dr. John Shaw - 4/06/05 - Use of the AGX- 32 ppm gel product on radiation burns. Dr. Shaw reports significantly reduced heal times using the product for burns received during cancer treatment, and also reported that the product provided moisture to dry damaged skin. (B- 8- 9)

\* Other Human Studies Or Reports

1) Fresno Cancer Clinic- Dr. John Shaw- two patient MRSA study- ASAP Gel- April 27,2007. Both infections eliminated. (B- 4 -1)

2) CIBRON Clinical Consultants- Dr. Andrew Willoughby & Dr. Derek Cleese- 10/24/06- Summary of 241 patient trials- *Detailed Summary Of Various Intra-oral Clinical Procedures And Clinical Findings Preformed By C&WGDP Utilizing ABL Products*. Findings were very positive. (B- 6- 7)

3) BM Hegde- Preliminary Seven Person HIV Treatment Study - 14 Of June 2007- Use of the 10 ppm product for four months, one ounce split into three teaspoons twice daily- Results were an average T-lymphocyte increase of 39% and average weight gain of 17 pounds. (B- 7- 3)

\* Summary Of Completed Studies And Tests Against Yeast, Bacteria, Virus Etc.

Thousands of tests proving the efficacy of ABL silver products have been completed by independent labs around the world. The tests have involved some of the most deadly pathogens that exist. This list contains only the larger independent studies that have been completed. The majority of this information is not public and is therefore proprietary.

\* ABL Silver vs. Yeast, Mold and Fungus

1) University Of California at Davis (Jason Henrie, 4/13/99)- Yeast Test- found effective in killing *S. cerevisiae* var and Montrachet forms of yeast. (A-1-1 Section 3) (B- 5- 2)

2) Brigham Young University- Antimicrobial Efficacy Against Vaginal Pathogens When Used As A Suppository- found effective in killing 21 pathogens, including two different types of yeast and one other fungus. Jessica K. Pate, August 2004.

3) Viridis BioPharma (India)- found effective in killing *Candida albicans*.

4) Analytical Resource Laboratory- found effective at killing *Candida albicans* (4 individual tests- *Aspergillus niger* 1 test- various dates and ppm's. (B-1-1)

5) Nelson Labs- (June 10, 2005) Antimicrobial testing hard surface- (17 pages) ASAP 10, AGX-32, modified 32 ppm, 100 ppm against *Candida albicans*, *Trichophyton*

mentagrophytes, *Aspergillus niger*, *Stachybotrys charatum*. (A- 4- 2)

6) Nelson Labs- (September 12, 2005) Antimicrobial testing hard surface - Stainless Steel (14 pages) AGX-32, *Candida albicans*. (A 4 - 3)

7) Universal Labs- (6 October, 2004) Antimicrobial Testing of AGX-32 and NSS 14 ppm - in Comparison to Phenol (a gold standard product for disinfection) against four pathogens including: *Candida albicans*, *Serratia marscescens*- Both the 14 ppm and the AGX-32 products were found to be 2-3 times as effective in killing the yeast as Phenol in 5-10 minutes. (A-1-3)

8) Nelson Labs- (May 31,2005) Antimicrobial testing hard surface 10 minute kill time- Log reduction test (19 pages) ASAP 10, AGX-32, modified 7 & 10 to 32 ppm, 100 ppm against Trichophyten mentagrophytes, *Salmonella choleraesuis*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *E. coli*, *Listeria monocytogenes*, *Enterococcus faecalis*, *Clostridium sporogenes*, *Clostridium difficile*, *Stachybotrys charatum*, *Candida albicans*, *Aspergillus niger* (A- 7 - 1)

9) Nelson Labs- (June 10, 2005) Antimicrobial testing hard surface 10 minute kill time- Use dilution tests- (17 pages) ASAP 10, AGX-32, modified 7 & 10 to 32 ppm, 100 ppm against *Trichophyten mentagrophytes*, *Stachybotrys charatum*, *Candida albicans*, *Aspergillus niger* (A- 7 - 6)

10) Nelson Labs- (June 10, 2005) Antimicrobial testing hard surface 10 minute kill time- Log reduction test - (10 pages) ASAP 10, AGX-32, modified 7 & 10 to 32 ppm, 100 ppm against *Trichophyten mentagrophytes*, *Stachybotrys charatum*, *Candida albicans*, *Aspergillus niger* (A- 7 - 7)

11) Manipal University, India- Dr. BM Hegde et. al. - Double blind study of 10 ppm against *Candida albicans*. Minimum level and time needed to inhibit and kill the microbe.

12) Nelson Labs- (September 9, 2005) Antimicrobial testing AOAC hard surface 10 minute kill time study- Log reduction test (10 pages-20 tests) ASAP 10, AGX-32, modified 7 & 10 to 32 ppm, 100 ppm against Trichophyten mentagrophytes, *Stachybotrys charatum*, *Candida albicans*, *Aspergillus niger* Found generally very effective at eliminating the four types of mold and yeast in the 10 minute test time. (B- 6 - 6)

13) Nelson Labs- (5/16/04) Antimicrobial testing hard surface - 10 minute Log reduction tests- (2 pages, 35 tests) ASAP 10, AGX-32, modified 32 ppm, 100 ppm against *Candida albicans*. Found extremely effective with a 3.52 - 5 log reduction at every ppm level tested. (B- 8- 7)

\* **ABL Silver Vs. Bacteria**

1) Brigham Young University- Antibiotic Comparison- found more effective and more

broad-spectrum than any of the individual antibiotics tested. (Revelli, Wall, Leavitt, March 30, 2000) (A-1-1 Section 1)

2) Brigham Young University- Activity Against Numerous Pathogenic Bacterium- found effective at killing every pathogenic bacterium it was tested against at less than 10 ppm. Pathogens included: Staphylococcus aureus, Shigella boydii, Salmonella arizona, Salmonella typhimurium, E. coli, Haemophiles influenzae, Klebsiella pneumoniae, Klebsiella oxytoca, Enterobacter aerogenes, Enterobacter colacae, Pseudomonas aeruginosa, Streptococcus pneumoniae, Streptococcus pyogenes, Streptococcus mutans, Streptococcus gordonii. (Revelli, Leavitt, June 24, 1999) (A-1-1 Section 2)

3) Analytical Resource Laboratory Test Summary Book - 31 individual test series- Various ppm's and Mixes including H<sub>2</sub>O<sub>2</sub>. - Pathogens included MRSA (13 individual tests, 10 ppm 99% kill in 30 min. against 6 million bacteria, higher ppm higher kill), Staphylococcus aureus (26 individual tests), Pseudomonas aeruginosa (7 individual tests), E. coli (13 individual tests), Staphylococcus epidermidis (1 test), Trichomonas vaginalis (3 individual tests), H. pylori (5 individual tests). (B-3-1)

4) Nelson Laboratories, Inc.- Antibacterial Tests- (Sept. 27<sup>th</sup> 2002) timed tests at 5 and 10 minutes- found effective at killing P. aeruginosa, S. Aureus, S. Choleraesuis (1080 individual bacterial tests) (21 pages). (B-2-1 Section 6)

5) Nelson Laboratories, Inc.- EPA timed tests at 5,10, and 15 minutes (1620 individual bacterial tests)- found effective at killing P. aeruginosa, S. Aureus, S. Choleraesuis. - March 20<sup>th</sup> 2001- (A-10-1 section 2 bacterial testing)

6) Nelson Laboratories, Inc.- Tuberculocidal Kill Time Study- 97.3% kill in 45 minutes.

7) Brigham Young University-01/22/99 - (David A. Revelli) - Activity Against Numerous Pathogenic Bacterium- found effective at killing every pathogenic bacterium it was tested against at 5 ppm or less. Pathogens included: Staphylococcus aureus, E. coli, Haemophiles influenzae, Pseudomonas aeruginosa, Streptococcus faecalis, Streptococcus pyogenes, Shigella boydii. (B- 4- 3)

8) Nelson Laboratories, Inc.- Sporicidal Activity Clostridium sporogenes (anthrax test) eliminated all spores in 8 hour study.

9) Brigham Young University- Sporicidal Activity Bacillus subtilis (anthrax test) - 6 log reduction in 5.02 hours- Richard A Robison, PH.D. 2/10/2003 (B-2-1 Section 5).

10) Illinois Institute Of Technology- Sporicidal Study B. anthracis- 99% kill at 6 hours.

11) Nelson Laboratories, Inc.- Sporicidal Activity (Anthrax AOAC Test) - passed for both Clostridium sporogenes and Bacillus subtilis at 10 hours.

12) Illinois Institute Of Technology- June 27, 2003 - Sporicidal Study (Anthrax AOAC

Test)- 14 ppm w/H<sub>2</sub>O<sub>2</sub> passed for Clostridium sporogenes at 8 hours as both a sporicide and sterilant. (A- 8 - 4)

13) Brigham Young University- Bactericidal Activity Against Y. pestis (Bubonic Plague)(Richard A. Robinson PH.D., 07/08/03)- 10 ppm 99.77% kill in 2 minutes, and the 32 ppm had greater than a 6 log reduction in less than 2 minutes. (B-2-1 Section 6)

14) CUWCD- Bacteria Kill In Water Treatment- killed all bacteria listed as TNTC in raw river water at a dilution of 1/100 (0.10 ppm) in 1.5 minutes of contact time. (Dodds, May 15, 2001) (A-1-1 Section 3)

15) CUWCD- Bacteria Kill In Water Treatment- killed all bacteria listed as TNTC in raw river water at a dilution of 1/200 (0.05 ppm) in 20 minutes of contact time. (Yates, September 13, 2000) (A-1-1 Section 3)

16) Grant H. Layton D.D.S.- Dental Unit Water Line Bacteria Biofilm Study- found effective in killing all biofilm and maintaining water purity at a level of 0.50 ppm. (B- 6 -2)

17) Viridis BioPharma- Antimicrobial Tests- Gel @ 22 and 32 ppm, liquid at 22 and 32 ppm - Antimicrobial tests included: MRSA 1, MRSA 2, Candida albicans, Staphylococcus aureus, Pseudomonas aeruginosa, E. coli, B. subtilis, S. pyogenes, S. typhi, Sh. flexneri, K. pneumoniae, C. diptheriae. (B- 2 -1 Section 8)

18) CUWCD (Don G. Yates 06/30/03) - Report on water treatment procedures and analysis and results of testing the ABL products for water treatment. (B- 6-3)

19) Universal Labs- (6 October, 2004) Antimicrobial Testing of AGX-32 and NSS 14 ppm - in Comparison to Phenol (a gold standard product for disinfection) against four pathogens including: Staph aureus, E. coli - Both the 14 ppm and the AGX-32 products were found to be over two times as effective in killing the bacteria as Phenol in 10 minutes. (A-1-3)

20) Universal Labs- (November 29, 2004) Antimicrobial Testing of AGX-32 and NSS 14 ppm - in Comparison to Phenol (a gold standard product for disinfection) against MRSA, - Both the 14 ppm and the AGX-32 products were found to be 2.5 times as effective in killing the MRSA bacteria as Phenol in 15 minutes. (A-1-4)

21) Universal Labs- (April, 2005, March 30, 2005) Antimicrobial Testing of AGX-32 in Comparison to nine disinfection chemical products (including things like: Iodine, Phenol, Alcohol, Ammonium, Aldehyde, Hydrogen Peroxide, etc.) All the products were tested against MRSA. The AGX-32 product was found to be a more effective disinfectant than all the other disinfectants against MRSA. The AGX-32 product was 112 times more effective as some other disinfectants. (A- 7- 4 )

- 22) CRA Labs- (July, 2005 Newsletter) Antimicrobial tests in dental water lines- AGX-32 found effective in eliminating both biofilms and other bacteria at 0.50 ppm.
- 23) Nelson Labs- (July,2005) Antimicrobial testing- AGX-32 found effective in killing numerous pathogens including black mold.
- 24) Nelson Labs- (12 August,2005) Antimicrobial testing- AGX-32 found effective in the disinfection of surface Stainless Steel against three deadly pathogens. Including Staphylococcus aureus, Pseudomonas aeruginosa, Listeria monocytogenes. (A- 7- 3)
- 25) Brigham Young University- E. coli Antimicrobial test 0157:H7 - Found to inhibit the growth at 2.5 ppm and to kill the pathogen at 5.0 ppm (Revelli, October 4,1999) (A-1-1 Section 2)
- 26) Nelson Labs- (June 10, 2005) Antimicrobial testing hard surface - Log reduction tests- (19 pages) ASAP 10, AGX-32, modified 32 ppm, 100 ppm against Salmonella choleraesuis, Staphylococcus aureus, Pseudomonas aeruginosa, E. coli, Listeria monocytogenes, Enterococcus faecalis, Clostridium sporogenes. (A- 4 - 1)
- 27) Nelson Labs- (June 10, 2005) Antimicrobial testing hard surface - Use dilution tests- (19 pages) ASAP 10, AGX-32, modified 32 ppm, 100 ppm against Salmonella choleraesuis, Staphylococcus aureus, Pseudomonas aeruginosa, E. coli, Listeria monocytogenes, Enterococcus faecalis, Clostridium sporogenes. (A- 7 - 8)
- 28) Nelson Labs- (September 12, 2005) Antimicrobial testing hard surface - Stainless Steel (14 pages) AGX-32, Pseudomonas aeruginosa. (A - 4 - 4)
- 29) Nelson Labs- (September 12, 2005) Antimicrobial testing hard surface - Stainless Steel (14 pages) AGX-32, Clostridium sporogenes. (A - 4 - 5)
- 30) Nelson Labs- (September 12, 2005) Antimicrobial testing hard surface - Stainless Steel (14 pages) AGX-32, Staphylococcus aureus. (A - 4 - 6)
- 31) Nelson Labs- (September 12, 2005) Antimicrobial testing hard surface - Stainless Steel (14 pages) AGX-32, Enterococcus faecalis. (A - 4 - 7)
- 32) Nelson Labs- (September 12, 2005) Antimicrobial testing hard surface - Stainless Steel (14 pages) AGX-32, Listeria monocytogenes. (A - 4 - 8)
- 33) Nelson Labs- (June 21, 2005) Antimicrobial Water Coliform Bacteria tests- No coliforms were detected in the eight tests. (A- 4- 9)
- 34) Nelson Labs- (May 31,2005) Antimicrobial testing hard surface 10 minute kill time- Log reduction tests, (19 pages) ASAP 10, AGX-32, modified 7 & 10 to 32 ppm, 100 ppm against Trichophyten mentagrophytes, Salmonella choleraesuis, Staphylococcus aureus,

*Pseudomonas aeruginosa*, *E. coli*, *Listeria monocytogenes*, *Enterococcus faecalis*, *Clostridium sporogenes*, *Clostridium difficile*, *Stachybotrys charatum*, *Candida albicans*, *Aspergillus niger* (A- 7 - 1)

35) University Of Georgia- (November 2004) Dr. Branson Ritchie- Antibiotic Resistant Profiles of *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Enterococcus faecalis* Isolated from human burn patients. Tested AGX alone and with Tricide and also Tricide and Cocam. In all cases it was found that the products could kill the pathogens and combinations were more effective at lower levels, MIC and MBC were established. (A- 9- 4)

36) Manipal University- India, University Of California at Berkeley- Dr. BM Hegde et. al. - Double blind study of 10 ppm killing multi-drug resistant organisms, including MRSA, VRE (*Vancomycin resistant Enterococcus*), *faecalis*, *Salmonella typhi*, *Salmonella flexneri*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *E. coli* (two strains), *Candida albicans*. Minimum level and time needed to inhibit and kill the microbes. All were killed at dilutions of ½ or 1/4 of 10 ppm level. (B-1-1)

37) Numerous Institutions (5) - Keith Moeller- Summary Report on American Biotech Labs Products vs. MRSA- 11/27/07. Summary of 28 in vitro tests and test series against MRSA- 5 different products. (B- 1- 2)

38) Nelson Labs- (May 4<sup>th</sup> , 2007) Use dilution test - Two lots 360 individual tests -10 minute kill time- (12 pages) AGX-32, *Pseudomonas aeruginosa*, *Staphylococcus aureus*. (B -1 - 3)

39) Analytical Resource Laboratory - 3/16/2007 - 4 individual test series- 10 ppm, 32ppm- against three pathogens- MRSA, *Staphylococcus aureus*, *E. coli*. The products were able to kill the pathogens within minutes. (B-2-2)

40) Nelson Labs- (January 21, 2008) Antimicrobial testing hard surface - Use dilution tests- (10 pages) AGX-32, against *Pseudomonas aeruginosa*, 60 test series at a total time limit of 10 minutes. No test failures and no living bacteria in any of the 60 individual tests done at 4 logs. (A- 8 - 5)

41) Nelson Labs- (February 19, 2008) Antimicrobial testing hard surface - Use dilution tests- (10 pages) AGX-32, against *Staphylococcus aureus*, 60 test series at a total time limit of 10 minutes. No test failures and no living bacteria in any of the 60 individual tests done at 4 logs. (A- 8 - 6)

42) Brigham Young University- Antimicrobial kill time study of AGX-32 against Tuberculosis - Tested at both 30 and 60 minutes- Richard A Robison, PH.D. 1/15/2004. Almost 90% kill in 60 minutes. (B- 4-2) .

43) Michigan Department Of Agriculture- 6/30/06 - 64 page report- AOAC Use Dilution

Product Test of ASAP AGX-32- 60 timed tests (10 minute) against Staphylococcus aureus at a level of 5,800,000 bacteria per mil, and 60 timed tests (10 minutes) against Pseudomonas aeruginosa at a level of 9,300,000 bacteria per mil. The product killed 100% of the 5.8 million bacteria in 57 of 60 Staph tests within the 10 minutes. The product killed 100% of the 9.3 million bacteria in 51 of the 60 Pseudomonas tests within the 10 minute time frame. The product was also found to contain 32 parts per million silver, the correct amount as stated on the bottle. (B - 4 - 4)

44) Brigham Young University- No date - (David A. Revelli) - Activity against E. coli. Inhibited at 1.25 ppm and killed at 2.5 ppm. Tested over different periods of time and at different ppm levels. (B- 5- 3)

45) Brigham Young University- No date - (David A. Revelli) - Direct comparison of ASAP silver vs. Tetracycline against 6 organisms. The pathogens included: Pseudomonas aeruginosa, Streptococcus faecalis, Streptococcus pyogenes, Shigella boydii, Salmonella arizona, Klebsiella pneumoniae. The ASAP was more effective than tetracycline on three of six bacteria, and as effective as tetracycline on two of the three remaining bacteria, killing the last bacteria as well, but at a higher concentration than the tetracycline. (B- 5- 4)

46) Brigham Young University- 01/28/99 - (David A. Revelli) - Activity against two pathogenic bacterium- the pathogens were: Salmonella arizona, Klebsiella pneumoniae. The ASAP was able to both inhibit and kill both pathogens at 2.5-5 ppm. **Particle Size Analysis** Transmission electron microscope (TEM) was used on the product and through digital analysis it was found that the average size of the 10 ppm silver product was 0.010 microns. The average size of the 30 ppm silver particle was found to be 0.015 microns. (B- 5- 5)

47) Brigham Young University- 02/03/99- (David A. Revelli) - Direct comparison of ASAP silver vs. Tetracycline against 1 organism. The pathogen was Streptococcus mutans. The ASAP was as effective against the tooth decay pathogen as the tetracycline. (B- 5- 6)

48) Brigham Young University- 02/12/99 - (David A. Revelli) - Activity against one pathogenic bacterium- the pathogen was: Streptococcus gordonii. The ASAP was able to inhibit the pathogen at 3.75 ppm. It is a tooth decay bacterium that is also implicated in infective endocarditis, which is infection of the heart valves. (B- 5- 7)

49) Brigham Young University- 03/26/99 - (David A. Revelli) - Direct comparison of ASAP silver vs. AS DC (direct current) made product against seven pathogens. The pathogens included: Pseudomonas aeruginosa, Streptococcus faecalis, Shigella boydii, Salmonella arizona, Klebsiella pneumoniae, E. coli, Staphylococcus aureus. The ASAP was found to be at least two to three times more effective (antimicrobial) than the DC product against the seven pathogens. (B- 5- 4)

50) Brigham Young University- 04/14/99 - (David A. Revelli) - Direct comparison of ASAP silver vs. Three DC (direct current) product purchased off the market, containing silver levels of 20 to 40 ppm. Testing was done against five pathogens. The pathogens included: Pseudomonas aeruginosa, Streptococcus faecalis, Salmonella arizona, Streptococcus pyogenes, and Staphylococcus aureus. The three competitor products did not do well, with some only inhibiting the bacteria, and were unable to kill them at any level tested. ASAP was found to be at least two to three times more effective (antimicrobial) than any of the competing products tested. (B- 5- 9)

51) University Of Arkansas - JKS Poultry Health Laboratory- B. M. Hargis- 12/08/05. A number of experiments using the ASAP AGX against two very resistant strains of Salmonella. Including Salmonella enteritidis, a strain that is even resistant to UVA. Salmonella Typhimurium was also used. Similar significant reductions were found at both 28.8 ppm and 9.6 in 20 minute timed tests. The last experiment was completed at a total time of 6 hours against both pathogens and the product killed all the bacteria in both tests in that time frame. (B - 5- 10)

52) CRA Dental Testing Labs - Teresa Rich, Brad Ploeger- 10/12/05- Testing of the AGX-32 product at diluted levels to disinfect dental water lines. At dilutions of between 0.25-1ppm the product was able to disinfect and meet CDC requested requirements for dental water line disinfection. The product was EPA approved for this use at 0.50 ppm. (B- 6- 1)

53) Analytical Resource Laboratory - 2/2/08- Antimicrobial testing of **24 ppm ASAP-USBC gel** against Staphylococcus aureus and E. coli. The product killed both types of bacteria within one hour. (B- 7- 5)

54) Analytical Resource Laboratory - 2/2/08- Antimicrobial testing of 24 ppm ASAP 24 ppm liquid product (Base for USBC gel) against Staphylococcus aureus and E. coli. The product killed both types of bacteria within one-two hours. (B- 7- 6)

55) University Of Florida- Experiment 209, 2003- Pesticide Efficacy Trials For Ornamental Plant Diseases. Control of foliar Xanthomonas Leaf spot on English Ivy. No plant toxicity was observed. The treated plants had fewer spots than the disease control.(B- 7- 11)

56) Nelson Labs- (5/16/04) Antimicrobial testing hard surface - 10 minute Log reduction tests- (2 pages, 35 tests) ASAP 10, AGX-32, modified 32 ppm, 100 ppm against Salmonella choleraesuis, Staphylococcus aureus, Pseudomonas aeruginosa, E. coli, Listeria monocytogenes, Enterococcus faecium. (B- 8- 7)

57) A& L Southern Agricultural Laboratories - May 22, 2003- Tests against Xanthomonas campestris- zone of Inhibition test- 16 test series- found to have a 14-16

mm zone of inhibition at 10 ppm. Not effective in the time frame at 1 or 5 ppm.(B- 8- 8)

58) Northeast Laboratories, Inc- 06/20/2006- Antimicrobial test series using 10 ppm, 20 ppm, 32ppm, and the ASAP silver product mixed at dilutions with zinc oxide against MRSA bacteria. All (28) ABL product tests were effective in reducing a challenge of 240,000 MRSA bacteria to a level of 100 or less bacteria within 5 minutes. Also tested against another brand of silver at the same levels and ABL product was shown to be more effective, even in the dilutions with Zinc. (B- 8- 11)

59) Analytical Resource Laboratory - Antimicrobial testing of ABL 10 ppm product mixed with Hydrogen Peroxide at both 1% and 3 %, against MRSA and E. coli. and H. pylori (six to eight logs of bacteria). Five test series, 12 tests. The products killed all three types on bacteria in 2-10 minutes of contact time. (B- 9- 1)

#### Bacterial Animal Study

1) Viridis BioPharma -November 2005 - In vivo efficacy of Silver Water Dispersion in Bacterial challenged Mice. Found that the ABL product brings down the bacterial count significantly lower as compared to the control and standard drug.

#### \* ABL Silver Vs. Virus

1) Viridis BioPharma- Bacteriophage viral model- killed a billion virus in 2.5 hours. - 10/29/2002 (B-2-1 Section 5)

2) Viridis BioPharma- Viricidal Activity against Hepatitis B Virus- 10 ppm found effective in both DNA Polymerase (2.48 times as effective as comparative drug) and Reverse Transcriptase (4.95 times as effective as comparative drug) inhibition. The 22 ppm also found effective at both (B- 8- 2)

3) Haffkine Institute (Dr. R.A. Deshmukh, 12/05/03)- Viricidal Activity against Hepatitis B Virus- 10 ppm found effective in both DNA Polymerase (2.48 times as effective as comparative drug) and Reverse Transcriptase (4.95 times as effective as comparative drug) inhibition. The 22 ppm also found effective at both. (A -2- 4)

4) U.S. National Institute Of Health- SARS Kill Test- 99% Reduction in 60 minutes.

5) Viridis BioPharma- Viricidal Activity against Hep B Virus - (March- June 2003) 10 ppm product found to be over twice as effective as a major drug in DNA Polymerase inhibition. 10 ppm was also found to be 4.95 times as effective as major drug in DNA Reverse Transcriptase inhibition. (A-9-2 )

6) Viridis BioPharma- (June, 2005) Full report on SilDust 100 wound sprinkling powder.

The test work includes antimicrobial testing against a viral challenge. The product is designed as a timed-release antimicrobial product. The product was found to kill the virus in three hours.

7) ATS- (November, 2005) Avian Influenza A Reassortant H3-N2 - Both 10 and 32 ppm- Killed 96.8 and 99.0% respectively in 2 hours. No virus found with either 10 or 32 ppm product at 12 hours.

8) ATS- (November, 2005) Beijing Influenza A H1-N1 - Both 10 and 32 ppm- Killed 98.2 and 99.9 % respectively in 2 hours. No virus found with either 10 or 32 ppm product at 12 hours.

9) Utah State University- NIH Lab (April, 2006) Avian Influenza A H5-N1 Vietnam Hybrid- 10 ppm reduced the virus to below detectable levels in 6 hours.

10) Viridis BioPharma- April 2004 - Viricidal Activity of ASAP 10 & 22 against HIV - Found to be at least twice as effective as a major drug in the Reverse Transcriptase inhibition. (A - 2 - 2)

11) Viridis BioPharma- October 2004 - Viricidal Activity of ASAP 10 & 22 against HIV A more in depth report than #10 - Found to be at least twice as effective as a major drug in the Reverse Transcriptase inhibition. (A - 2 - 3)

12) Viridis BioPharma- December 2003 - One page preliminary report - Viricidal Activity of ASAP 10 & 22 against HIV - Found to be at least twice as effective as a major drug in the Reverse Transcriptase inhibition. (B - 8 - 3)

#### Viral Animal Study

1) Utah State University - H5-N1 Bird Flu Study (December 2006) the Institute completed an *in vivo* study, in which the use of ASAP doubled the survival rate of mice infected with H5N1. 60% of the infected mice treated with ASAP-10 survived. 30% of the placebo-treated, infected mice survived. The survival rate of ASAP-treated mice was 100% greater than the survival rate of the control group mice. This data suggest that ASAP inhibits progression of the disease. Summary Report (A-1-6)

#### Human HIV Study

12) Kasturba medical College (India)- Dr. B.M. Hegde et.al - Seven person HIV study showing weight gain and T-Lymphocyte count, using 2 teaspoons of ABL 10 ppm product three times daily for four months- study showed average weight gain of 17 pounds and T cell increase of 39%. (A-10-3)

\* **ABL Silver Safety And Toxicity Studies**

- 1) NAMSA - Toxicity Tests- found non-toxic at up to 200 times the normal adult dosage. (Nichols, July 7, 1999) (A-1-1 Section 4)
- 2) Brigham Young University (Jessica K. Pate, Dr. Ron W. Leavitt, 08/04)- Probiotic Bacteria Study- found that it did not kill probiotic bacteria. (A-1-7)
- 3) Viridis BioPharma- Probiotic Bacteria Study- (March 2004) found that it did not kill probiotic bacteria. (A-1-8)
- 4) Sheri C. Patel Research Centre- Found non-toxic in injection mouse model tests at up to 50 mg/kg (10 ppm). (A-9-1 section 3)
- 5) Sheri C. Patel Research Centre- (gel 32 ppm) - Found non-toxic in oral mouse model tests at 50, 500, and up to 5000 mg/kg. (A-9-1 section 5).
- 6) Sheri C. Patel Research Centre- Found non-toxic in injected mouse model tests at up to 50 mg/kg (AGX- 32 ppm). (A-9-1 section 4)
- 7) Viridis BioPharma- Cytotoxicity Study- found non-cytotoxic in human hep2 cell line and also found non-cytotoxic in a Vero cell line (African Green Monkey). (June, 2003) (A-1-1 Section 4)
- 8) Northview Pacific Labs- (13 December,2004) AGX-32 Skin irritation tests- The product found non-irritating to the skin. (A- 7- 5)
- 9) Nelson Labs (Northview Pacific Laboratories)- (December 28, 2004) Skin Irritation Test - 32 Gel Product (Rabbits)(10 pages) 32 gel product found no irritation response. (A- 4 - 9)
- 10) Nelson Labs (Northview Pacific Laboratories)- (December 28, 2004) Delayed Hypersensitivity Test- Skin - 32 Gel Product (Guinea Pigs)(19 pages) 32 gel product Injected intradermally - found no different than the control. (A- 4- 10)
- 11) Nelson Labs (Northview Pacific Laboratories)- (December 28, 2004) Delayed Intracutaneous Reactivity - Skin - 32 Gel Product (Rabbits)(12 pages) 32 gel product Intracutaneous injections - Very Slight Sensitivity. (A- 4 - 11)
- 12) Kasturba medical College (India)- Dr. B.M. Hegde et.al - 28 day toxicity profile study of the use of ABL silver in rats. 150-200 gram rats. Given daily at 0.5 ml, 1.0 ml, and 1.5 ml. - found no toxic effects in the body or organs, all checked. (A- 10- 2)

13) Viridis BioPharma- Toxicity Study of 32 ppm Gel- 1/31/05- Animal model study (mice) at 50 mg, 500 mg, 5000 mg by oral route. Found Non-toxic at all levels tested in the animals. (B- 7- 8)

14) Nelson Labs - (December 30, 2004) Cyto-toxicity of the AGX 32 - Silgel FDA product- found to have very mild negative effect on cells. (B- 8- 12)

\* **ABL Silver vs. Other Microbes**

1) Analytical Resource Laboratory -Rapid Challenge Test- found effective at killing Trichomonas vaginalis.

2) Four hospitals in Ghana, West Africa- 3 Human Studies Against Malaria Etc.- found effective in killing the malaria protozoa and eliminating it from the bloodstream within an average of 3.43 days (study number three).

3) Viridis BioPharma (22 July, 2005)- Malaria trial animal model (Plasmodium berghei) interim report. (10 ppm) Found to have a 94.3% inhibition rate.

4) Clancy Environmental Consultants- 05/14/07 - Disinfection of Cryptosporidium parvum Oocysts with AGX-32 product. Crypto cysts are perhaps the most deadly and most difficult organism to kill in water treatment. The AGX- 32 product was tested at a time of 4 hours and produced a kill rate of 96% on the cysts. (B- 5- 11)

\* **Antibiotic/ASAP Combination Papers, Draft Papers, New Patents and Product Reports**

1) Viridis BioPharma- Antibiotic Symbiotic Relationship Study- Found to have a very high symbiotic relationship in killing MRSA etc. with two different antibiotics. Found to be much more effective than either of the antibiotics separately or even when combined.

2) Peer Review Paper- Viridis BioPharma- Bacterial Activity Of Combinations Of ASAP With 19 Antibiotics Against 7 Organisms. Current Science Oct 2006 Vol 91. Found to have a synergistic or additive effect in 94 of 96 completed tests. (Meghshree, Mehta, Souza Et Al. (A-3-2)

3) Draft Paper- A Novel Approach For Treatment Of Multi Drug Resistant (MDR) And Multi Co-Therapy Resistant (MCR) Mutants Using ABL Engineered Silver Nano Particles- Antibiotic Comparison. (Meghshree, Mehta, Souza, June 2005) (A-2-1 Part One)

- 4) Draft Paper- Prevention Of Gentamicin Resistant Mutans By Closing Mutant Selection Window (MSW) With ABL Engineered Silver Nano Particles. (Meghshree, Mehta, Souza, June 2005) (A-2-1 Part Two)
- 5) Peer Review Paper- Pedersen, Sidwell, Moloff, etc- Effect Of Prophylactic Treatment With Silver Sol Solutions on Avian Influenza A (H5N1) Virus Infection in Mice- August 30<sup>th</sup> 2007. Found that it increased survival by 100%. (A-7-9)
- 6) Peer Review Paper - Ultradilute Ag-aquasols with extraordinary bactericidal properties, Materials Research Innovation Vol. 11 2007. Rustum Roy Et Al. Found that ABL's technology has extraordinary bacteria killing ability, also that the particle is metallic and a number of other findings on the ABL silver particles (reduces pain etc.). (A-7-10)
- 7) Report - Viridis BioPharma- ASAP-Antibiotics Combination Therapy- October 2004 (32 pages). The study found that the combination therapy was highly effective against multi-drug resistant bacteria (MRSA, E. coli, Pseudomonas). The ASAP silver was tested against the bacteria in combination with two drugs (amikacin, cefoperazone). The test showed that the silver and the antibiotics worked with symbiotic or additive value. (A-8-3)
- 8) Report - Penn State University - Brief Summary Report Research Studies on American Biotech Labs ASAP Silver Colloids- Dr R. Roy & Dr M. R. Hoover. The study found that the ABL silver products were different and distinguishable from other silver products. (A- 9-3)
- 9) Silver Complexes Report- February 2005. The report explores the use of the silver technology with four other compounds for use against infection, tumors and ulcers etc. (A-9-5)
- 10) Report- Keith Moeller- Silver Solutions, Argyria And Risk.- History of silver usage, amounts deemed safe for human consumption and injection. What is and what causes argyria, silver vs. antibiotics from a safety standpoint, etc. (A-10-1 section 4)
- 11) Report- Brigham Young University (David Revelli, June 18,1999)- Direct comparison of the antimicrobial activity of American Biotech Labs silver products with three other commercial silver products at the same strength- Report found that the American Biotech labs products were at least 200-300% more effective at killing bacteria than the other silver products at the same strength. (A- 10-1 section 5)
- 12) Report- Dr. Maxfield DMD- December 2007- Use of the 10 ppm product and 24 ppm gel in six dental applications for the reduction of bacteria and infection. (B- 4- 5)

13) News Report-22 CRA Labs- (July, 2005 Newsletter) Chosen and listed as one of the top 4 of 43 Dental Disinfectants and listed as meeting and passing all four criteria tested against by CRA Labs for independent water line systems. Listed as least expensive of the three products. (B- 7- 10)

14) Report - Viridis BioPharma- In-vitro MIC (minimum inhibition concentration ) of ABL Silver solution with disodium EDTA (patent pending) against eight microbial strains, including: Salmonella typhi, Staphylococcus aureus, MRSA, Pseudomonas aeruginosa (multiple drug resistant), E. coli (multiple drug resistant), Shigella flexneri, Bacillus subtilis, Candida albicans. The combination of the two products was highly effective at inhibiting each and every pathogens at 1-16 ppm. (B- 8- 1)

15) NDE Analytical - Material Science Report - Composition of ABL silver nano-particle - May 8<sup>th</sup>, 2002 - Found that the particle is made up of metallic silver with an AG4 04 oxide skin on the particle. Found no other significant oxidation states- Also includes Report from Robert Holladay on the nano-particle. (B- 8- 13)

\* **Other Completed Studies And Tests With ABL Silver**

1) 1000 bottle burn treatment study (Summit Cancer Clinic)- found effective in the treatment of radiation burns at just 10 ppm.

2) FDA burn studies, (Viridis BioParama) studies for FDA approval, including comparisons to pharmaceutical products- found to be 10 times more effective at killing the MRSA bacterium than a leading pharmaceutical product, even though the leading pharmaceutical product contained over 300 times more of the active ingredient (silver) than the ABL product.

3) Kansas State University- Food disinfection tests (used on beef) - found safe and effective in the killing of bacterium on beef carcasses.

4) A & L Southern Agricultural Laboratories- found effective against Xanthomonas campestris pv. vesicatoria.

5) University Of Florida- Pesticide Efficacy Trials For Ornamental Plant Diseases- found to reduce disease leaf spots.

6) Brigham Young University (Jessica K. Pate, 04/04)- Antimicrobial Activity Of Dry ASAP-AGX On Impregnated Surgical Mask Material- even after the product was dried on the mesh material, the product was found effective at killing bacteria pulled into the mask material.

7) Brigham Young University (Jessica K. Pate, 08/04)- Antimicrobial Activity Of ASAP-AGX In A Soap Solution- found to be a highly effective antimicrobial even when the product was diluted down to just 5.6 ppm, in a soap matrix. In the test work, the ABL silver product/soap mix, killed 21 pathogenic bacterium, 2 different yeasts, and *Trichophyton rubrum* (athlete's foot, jock itch, ringworm).

8) Brigham Young University- Increased Efficacy of Povidone Iodine 10% Solution When Combined With ASAP- AGX- found to have a synergistic relationship in disinfection.

9) Gerard Yates- Director CUP- 3/24/99- ASAP vs Chlorine for the disinfection and long term storage of water and the problems of chlorine degeneration over time. (A-7-12)

10) Viridis BioPharma- (June, 2005) Full report on SilGel 100 including antimicrobial testing against six pathogens. Found highly effective in killing all six pathogens including MRSA and Candida Yeast, several of the pathogens were (MDR) *Multi Drug Resistant* strains. (A - 5 - 3 Section 1)

11) Viridis BioPharma- (June, 2005) Full report on SilDust 100 wound sprinkling powder. The test work includes antimicrobial testing against three (MDR) *Multi Drug Resistant* strains of bacteria and one viral challenge. The product is designed as a timed-release antimicrobial product. The product was found to kill the MDR bacteria in minutes and the virus in three hours. (A - 5 - 3 Section 2)

12) Viridis BioPharma- (June, 2005) Full report on SilDerm- including antimicrobial test work showing that SilDerm will have continuous antimicrobial activity for up to three days. (A - 5 - 3 Section 3)

13) Viridis BioPharma- (June, 2005) Full report on Silver EDTA- The product was found effective in test work against six pathogens (3 MDR strains). (A - 5 - 3 Section 4)

14) Viridis BioPharma- (June, 2005) Draft Paper on a novel approach for treatment of Multi Drug Resistant (MDR) and Multi Co-therapy Resistant (MCR) mutants using ABL's engineered nano silver particle - Antibiotic combination. (A - 5 - 2) (A - 5 - 3 Section 5)

15) Viridis BioPharma- (June, 2005) Draft Paper on *Prevention of Gentamicin Resistant Mutants by closing Mutant Selection Window (MSW) with ABL's engineered nano silver particle.* (A - 5 - 1) (A - 5 - 3 Section 6)

16) Brigham Young University- Activity Against Pathogenic Bacterium In Direct Comparison To Three Other Silver Products- found to be at least 2-3 times more effective

at killing pathogens than the three other silver products tested. (Revelli, June 18, 1999) (A-1-1 Section 5)

17) Douglas C. Suarino M. D.- Activity of ASAP Gel on burns- August 7, 2006. Found effective in treating a wide variety of burns and a fungus. (A- 1- 2)

18) University Of Utah- October, 2005- The Effects of AGX Silgel on Epidermal Wound Healing In Swine- FDA Study. The report is 244 pages. (A - 6 -1)

19) Brigham Young University- 12/03/99 - (David A. Revelli) - **Particle Size Analysis** Transmission electron microscope (TEM) was used on the product and through digital analysis it was found that the average size of the 10 ppm silver product was 0.0106 microns. With a general range of 0.0005 microns to 0.0851microns. (B- 6- 4)

20) Alpine Technical Services - 07/30/99 - Purity of Water Used In ABL Production Process Report. The water contains total dissolved solids of megohm, or less than 0.4 ppm. A level of TDS about twice as pure as a quality distilled water. (B - 6 - 5)

21) Application For Patent - Dental Uses Of Silver Sol Technology - Prepared by Venable Group. 3/06 (B- 6- 8)

### **Other Completed Reports And Papers On ABL Silver Sol Technology**

1) Viridis BioPharma - SilGel Product Dossier- Complete SilGel Technology Report- Ingredients, Studies, Process, Microbiological Evaluation, Wound Healing, ETC. (April 2004) (A-3-1)

2) Utah Department Of Agriculture and Food - 3/20/08- Good Manufacturing Practice Certificate. (B- 7- 1)\

3) Utah Department Of Agriculture and Food - 3/20/08- Certificate Of Free Sale & Sanitation Inspection. (B- 7- 2)

4) Analytical Resource laboratory /ABL - Stability Tests on ABL 10 ppm product- Tested at two and six years. The conclusion was that the product suffered no measurable degeneration after being stored for six years. (B- 7- 4)

5) Analytical Resource laboratory /ABL - Stability Tests on ASAP 24 ppm Ultimate Skin and Body Care gel product- Tested at 18 months. The conclusion was that the product suffered no measurable degeneration after being stored for 18 months and was able to kill 99.6 % of Staphylococcus aureus bacteria and 99.1 % of E. coli bacteria within one hour. Also included was a second test series against a new lot of the product against the same bacteria for comparison. (B- 7- 7)

6) Chinese report on test work from American Biotech Labs products - June 2007 - Mainland China report on ABL information taken from Chinese archives and delivered personally to Keith Moeller in Singapore. Written in Chinese, translation currently unavailable. (B- 8- 4)

7) Venable LLP- Legal Brief On ABL Patents- March 17, 2008 - The broad spectrum nature of Claims approved on ABL patents not only for the killing of bacteria, fungus, and virus, but for use against disease. The fact that ABL is the first, or is among the first companies to ever have patents issued for use of silver to treat virus. (B- 8- 5)

8) Chemir Analytical Services- 3/13/08 - Testing on TEA content in finished USBC gel, found to be at 0.26%. (B- 8- 6)

9) U.S. Integrative Center For Homeland Security - Paul K. Carlton, Jr. M.D. FACS - November 10, 2003 - Letter to the U. S. Office of Homeland Security recommending the purchase of American Biotech Labs product for use against bio-terrorism and infectious disease such as SARS. (B- 8- 10)

#### **Miscellaneous**

1) EPA RED document (B- 7- 9)

This list is not intended to be a full list of American Biotech Labs test work completed to date. It is only those reports indexed so far. For more information contact Keith Moeller, a Managing Director at 801-756-1000 or keith@americanbiotechlabs.com.